

VESSEL WITH MEASURING CAPABILITY**CROSS-REFERENCE TO RELATED APPLICATION**

This is a continuation-in-part of U.S. application Ser. No. 09/313,686, filed May 18, 1999, entitled "Measuring Cup," now U.S. Pat. No. 6,263,732.

BACKGROUND

This invention relates to vessels for containing measurable contents. More specifically, this invention relates to a vessel having graduated indicia.

Vessels such as cups, bowls, spoons and the like which have a measuring capability are known. Such devices can be made from a variety of materials, including plastic, metal and glass. One of the most common measuring vessels found on the market today is a transparent measuring cup made of Pyrex® which is resistant to sudden changes in temperature to which it may be subjected during use.

The utility derived from a measuring vessel is related to the ease with which volumetric indicia on the measuring vessel's wall may be read by a user. Of course, any suitable units of measurement may be used to indicate the level to which contents have risen within a measuring vessel.

Traditional measuring vessels have indicia marked upon the measuring vessel wall in a manner which sometimes makes the indicia difficult to read, depending upon how precise a measurement is needed, the materials from which the measuring vessel is manufactured and the physical condition of the user, for example. In the case of a measuring cup which is made from transparent or translucent material, e.g., Pyrex®, the most precise way to measure the contents contained therein is to place the measuring cup upon a level surface, pour the contents to be measured into the measuring cup and then stoop down to the vertical level of the measuring cup to attempt to visually detect the bottom of a liquid meniscus or a level surface of solid contents. An alternative method of reading the level to which contents in a transparent or translucent measuring cup have risen is to lift the measuring cup to eye level and attempt to hold the measuring cup steady while visually detecting the volume. In either use, the observer is looking in a generally horizontal direction to detect the volume.

Prior art measuring cups that are opaque are more difficult to read than transparent or translucent measuring cups. In order to read the volume of contents held within an opaque measuring cup, a user must peer over the upper margin of the measuring cup to view, as closely as possible, the level to which contents have risen, either by stooping to the measuring cup's level or by lifting the measuring cup to eye level.

While the above-described methods for determining the volume of contents in a measuring cup may seem simple enough for most users, these methods can prove to be difficult for others. Users with bad knees, a bad back, or arthritis, for example, may not only have substantial difficulty in stooping over to accurately read the volume of contents in a measuring cup placed on a level surface, but may also have just as much difficulty in lifting a measuring cup to eye level and holding the cup steady to read the volume of contents held therein. When precise measurement of the volume of contents within a measuring cup is critical to a task, the simple actions of bending over or lifting a measuring cup to eye level, which seem easy to some users, may become difficult and uncomfortable for others.

Measuring the volume of cooking ingredients using prior art measuring cups can also be frustrating. As mentioned above, it can be difficult for a user to stoop over to read the level of contents when placed on a level surface or when lifted to eye level. An unsteady hand not only makes the volume of contents difficult to determine when a measuring cup is lifted to eye level, but a user may spill contents or even drop the measuring cup when attempting to do so.

- Measuring vessels are not limited in their utility to the kitchen, of course. They may also be used for measuring proper ratios of solutions, e.g., antifreeze, the precise measurement of which is critical to its application and simplicity of determining a precise volume is necessary. Other common household solutions can be dangerous, e.g., toxic or caustic, and when a measuring vessel is filled with these solutions, the possibility of spilling them within the proximity of a child or a pet greatly increases when a measuring vessel must be raised to eye level to determine the volume of its contents.
- It is an object of the present invention to simplify the way in which a person can accurately determine the volume of material held in a vessel.

It is another object of the invention to improve a measuring vessel to make it more conducive to a simple and accurate volume determination.

SUMMARY

The present invention achieves the above-stated objectives by including with a vessel at least one sloped ramp having an upwardly directed surface having indicia which are readily observable by an observer looking downwardly toward the open end of the vessel.

The structure simplifies volume determination because there is no need for the observer to move relative to the vessel in order to look in a horizontal direction at the vessel indicia. Thus, the possibility of spilling is reduced. Also, since the ramp preferably rises continuously and gradually from the bottom of the vessel, a user who is filling the vessel from above can actually see the volume indicia on the upwardly directed surface of the ramp while the vessel is being filled, looking along the same line of sight generally used during filling. These advantages result from the ability to visually determine the volume of the contents of the vessel by simply looking into the open upper end, and the gradual slope of the ramp.

According to a first preferred embodiment of the invention, a cup has wall structure including a bottom wall and an encircling vertical side wall, so that the cup is cylindrical in shape with an open upper end. Inside the cup, at least one ramp slopes continuously upward from the bottom wall toward the open upper end. The ramp includes an upwardly directed surface bearing printed volume indicia viewable through the open upper end to visually determine the volume of cup contents. Preferably the cup has two ramps formed integrally along the side wall, with one bearing standard English units of measurement and the other bearing metric units. The two ramps have oppositely located bottom ends and oppositely located top ends. The cup also has a handle and a spout, with the handle located adjacent one ramp and the spout located adjacent another.

In a second embodiment, the side wall is sloped somewhat, rather than vertical. The cup includes two integral, oppositely located ramps with adjacently located bottom ends and adjacently located top ends. The top ends feed toward the spout, and again, one ramp bears indicia in standard English units and the other bears metric indicia.

In another embodiment, the handle is cantilevered from the side wall and has a vertical grip portion terminating at a distal end in the plane of the bottom wall to provide additional self-support, and covered with an elastomeric grip sheath.

With any embodiment, the cup can be formed of any suitable material and via any suitable process, although transparent and moldable material is preferred and manufactured using a molding process is also preferred.

Certain ones of these and other features may be attained by providing a vessel comprising: a wall structure defining a cavity with an open upper end for receiving contents having a measurable volume, a continuous ramp extending upwardly from adjacent to a lower end of the wall structure, and indicia positioned on the ramp so as to be observable by a user looking downwardly toward the open upper end and providing a readily observable indication of the volume of the contents of the vessel.

These and other features will be more readily understood in view of the following detailed description and the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a measuring cup according to a first preferred embodiment of the invention;

FIG. 2 is a top plan view of the measuring cup of FIG. 1;

FIG. 3 is a cross-sectional view of the measuring cup of FIG. 2 taken along lines 3—3;

FIG. 4 is a perspective view of a second embodiment of the present inventive measuring cup;

FIG. 5 is a top plan view of the measuring cup of FIG. 4;

FIG. 6 is a side view of the measuring cup of FIG. 4 illustrating the nesting feature thereof;

FIG. 7 is a top plan view of another embodiment of measuring cup; and

FIG. 8 is a side elevational view of the measuring cup of FIG. 7.

DETAILED DESCRIPTION

Figs. 1-3 show a first preferred embodiment of the present inventive vessel in the form of a measuring cup 10. Generally, the measuring cup 10 is integrally formed of a suitable material and has a handle 12 and a spout 14 integrally attached to a substantially vertical side wall 16. The measuring cup 10 has a base or bottom wall 18 integrally attached around its perimeter to the bottom edge of the side wall 16. The side wall 16 cooperates with the bottom wall 18 to form wall structure which defines a cavity which has an open upper end.

The wall 16 has an inside surface 20 and an outside surface 22 from which ramps 24a, 24b are formed in relief. The measuring cup is of unitary, one-piece construction, molded from any suitable food grade plastic known in the art. However, it will be understood that the measuring cup 10 may be manufactured by any suitable process. It will also be understood that the measuring cup 10 may be made of any other suitable material known in the art, e.g., Pyrex® or metal.

The ramps 24a, 24b are located on opposite sides of the cup 10 but are identical in construction. Therefore, only one such ramp is described. Each ramp has a ramp base, or bottom end 25, and a ramp top or upper end 26. The ramp base 25 is located proximate the bottom edge of the side wall 16, and the ramp top 26 is located proximate the top edge of

the side wall 16. The ramps 24a, 24b have respective upper ramp surfaces 30a, 30b, which are generally upwardly directed and have a substantially constant slope between the ramp base 25 and the ramp top 26. In the first preferred embodiment, the ramps 24a, 24b are oppositely disposed on the inside surface 20 of the wall 16. Also, in the first preferred embodiment, the ramps 24a, 24b traverse substantially the same distance from the bottom margin of the wall 16 to the top margin of the wall 16 along the inside surface 20. It will be understood by those skilled in the art that the ramps 24a, 24b may have a greater or lesser slope, which in turn would result in shorter or longer distances, respectively, traveled from the bottom margin to the top margin of the wall 16.

The ramps 24a, 24b have a slope great enough so that the ramps 24a, 24b do not extend more than half the circumference of the wall 16, as seen in FIG. 2. Also, the ramps 24a, 24b do not overlap each other. That is, the ramp 24a does not rise over the ramp 24b on the inside surface 20 of the wall 16. In the first preferred embodiment of the measuring cup 10, the side wall 16 is substantially normal to the base 18, so that the cup 10 is generally cylindrical in shape. In the illustrated embodiment the side wall 16 is slightly oval in transverse cross section but it could be circular or have other shapes. It will be understood by those skilled in the art that the wall 16 may angle away from the perimeter of the base 18 so that the measuring cup 10 may receive a second measuring cup (not shown) therein, i.e., allow plural measuring cups 10 to stack inside each other.

Each of the ramps 24a, 24b is provided with volume indicia 27a, 27a, on the upwardly directed surface 30a, 30b, so a user may easily look down toward the measuring cup 10 from above and view the volume level of the contents 28 within the cup 10. In the first preferred embodiment, the ramp 24a is provided with metric indicia 27a on ramp surface 30a, and ramp 24b is provided with standard English indicia 27a on ramp surface 30b. It will be understood by those skilled in the art that the indicia 27a, 27a may be spaced differently relative to each unit of measurement on respective ramps 24, 24b, depending on the desired slope of the ramps 24a, 24b.

The side wall 16 has portions below the ramps 24a, 24b integral with the lateral inner edges of the ramp surfaces 30a, 30b, and portions above the ramps integral with the lateral outer edges of the ramp surfaces 30a, 30b.

Figs. 4-6 show a second preferred embodiment of an inventive measuring cup 100. The measuring cup 100 has wall structure including a side wall 116 integral with a bottom wall or base 118 for cooperation therewith to define a cavity with an open upper end 132 having a width A larger than the width B of the bottom wall or base 118. Thus, the side wall 116 slopes outwardly away from the base 118 as the side wall 116 rises from its bottom edge to its top edge so that at least a second measuring cup 100' (FIG. 6) can be stacked within the measuring cup 100. The cup 100 has a handle 112 projecting from the side wall 116 adjacent to its upper end, and a spout 114 projecting from the upper end of the side wall 116 opposite the handle 112, the spout 114 having a lower entry end and an upper exit end at the open upper end 132. The measuring cup 100 has a pair of oppositely located, but identically sloped ramps 124 which are substantially continuous around the side wall inside surface 120 from the ramp bottom 125 toward the ramp top 126. That is, both ramps 124 rise symmetrically along the inside surface 120 of the side wall 116 from about the bottom edge of the side wall inside surface 120 generally opposite the spout 114 to near the top edge of the side wall 116 adjacent to the base of the spout 114.